

### **ABSTRACT OF THE DISCLOSURE**

The present invention relates to a metal palladium composite membrane or an alloy palladium composite membrane in which essentially the metal palladium membrane or alloy palladium membrane exists substantially on the outer surface of the porous substrate support, with little or no presence in the pore channels of the support, and to process for its preparation. The process comprises the steps of treating the porous substrate with a pore filler before plating it with a palladium solution to form the composite membrane.